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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/851,158	05/09/2001	Toshiyuki Shigaraki	862.C2224	2511

5514 7590 11/20/2002

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EXAMINER

KIELIN, ERIK J

ART UNIT PAPER NUMBER

2813

DATE MAILED: 11/20/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/851,158

Applicant(s)

SHIGARAKI, TOSHIYUKI

Examiner

Erik Kielin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period of Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 August 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) 4-15 and 19-33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 16-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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DETAILED ACTION***Election/Restrictions***

1. Applicant's election with traverse of species I, claims 3 and 18, in Paper No. 6 is acknowledged. The traversal appears to be on the ground(s) that Examiner equated claims with species. This is not found persuasive because Examiner, in the interest of faster prosecution and customer service, merely provided the claims that appeared to read-on the species in order to save Applicant's Representative from having to determine this and further to prevent any potential waste of time should the claims indicated by Applicant read on more than one of the indicated species. Examiner apologizes for any inconvenience for having provided this extra service.

The traversal also appears to be on the ground(s) that "the various embodiments are so closely related as to not require separate fields of search." Examiner respectfully disagrees that the inventions are closely related. The numerous embodiments --verily the single embodiment elected-- extends across many fields of search because the invention is cross-discipline, involving semiconductor manufacturing apparatus, its maintenance, safety of personnel, and sensors. The other embodiments involve computer networking, semiconductor manufacturing plants, hazardous material sensing, specific means for providing gas/air supply means to ensure safety, etcetera.

Moreover, the restriction requirement filed 30 July 2002 states,

"Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the

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evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.” (Emphasis added.) .

In as much as Applicant has not stated on the record that the indicated species obvious variants, it would appear that Applicant agrees that indicated species are, in fact, patentably distinct. Examiner is willing to consider any species for which Applicant clearly admits on the record, or for which Applicant provides evidence indicating that, the species are obvious variants.

The requirement is still deemed proper and is therefore made FINAL.

Claims 3-15, 19-33 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Because claims 1, 2, 16, and 17 are generic, claims 1-3 and 16-18 are active and will be examined.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 3 and 18 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a decision means for deciding the start of maintenance

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preceding the opening of a paneling opening and the sensing that the panel is opening, does not reasonably provide enablement for the decision means deciding maintenance *after* the door has been opened. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

Applicant indicates that it is the sub-standard functioning of the apparatus which dictates the decision for maintenance to be performed on the apparatus -- not whether or not a maintenance panel has been opened. Applicant appears to indicate that dirty optics or lamps dictates whether maintenance is required -- not the mere open-state of a panel in the apparatus. See, for example, the instant specification at p. 2. Additionally, the instant specification appears to indicate, in another embodiment, that it is the worker that decides that maintenance should be performed, at the paragraph bridging page 15, lines 20-21.

Finally, it appears that the claim was intended to reflect that "if said open/close sensor senses that the panel has been opened" then this triggers the air supply system to provide clean, dry air, in order to raise the oxygen concentration in the maintenance environment to a safe level for the worker. See the Abstract which states,

"A maintenance cover is provided with a door switch for sensing that the cover has been opened. Actuation of the [air] supply unit is started in accordance with the state sensed by the door switch."

For the purposes of patentability, the claims 3 and 16 will be interpreted, as just indicated, since this has support from the specification.

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Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-3 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Semiconductor Equipment and Materials International (SEMI) publication **S2-0302** entitled, "Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment."

S2-0302 states on p. 6,

"6.1 A primary objective of the [semiconductor manufacturing] industry is to eliminate or control hazards during the equipment's life cycle (i.e., the installation, operation, maintenance, service, and disposal of equipment)." Note that "equipment" is defined therein as "a specific piece of machinery, apparatus, process module, or device used to execute an operation." (See p. 3, section 5.2.11.)

S2-0302 further states on p. 7,

"6.9.2 *Incorporate Safety Devices* -- If identified hazards cannot be eliminated or their associated risk adequately controlled through design selection, then the risk should be reduced through fixed, automatic, or other protective safety design features or devices." (Section 6.9.2; emphasis in original.)

"6.9.3 *Provide Warning Devices* -- If design or safety devices cannot effectively eliminate identified hazards or adequately reduce associated risk, a means should be used to detect the hazardous condition and to produce a warning signal to alert personnel of the hazard." (Section 6.9.3; emphasis in original.)

In section 22 entitled "**22 Exhaust Ventilation**" (emphasis in original), pp. 24 and 25,

S2-0302 states,

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“22.1.2 As supplemental control when intermittent activities (e.g. chamber cleaning, implant housing cleaning) present potentially hazardous chemical exposures to employees which cannot reasonably be controlled by other means[, s]upplemental exhaust hood or enclosures may be integrated into equipment design, or supplied completely by the equipment user.”

“22.1.2.1 When a procedure (e.g., cleaning) specified by the supplier requires exhaust ventilation, the supplier should include minimum criteria for exhaust during the procedure.”

“22.2 Equipment exhaust ventilation should be designed and a ventilation assessment conducted ...to control, efficiently and safely, for potential worst-case, realistic employee exposures to chemicals during normal operation, maintenance, or failure of other equipment components (hardware or software).”

“22.4.1 When the exhaust falls below the prescribed set point, an alarm should be provided within audible or visible range of the operator, and the process equipment should be placed in a safe stand-by mode... The system should be capable of interfacing with the facility alarm system.”

Regarding claims 1, and 16, according to at least, 6.1 and 22.2, maintenance and service must be performed on semiconductor apparatus. It would have been obvious for one of ordinary skill in the art, at the time of the invention, to provide “a decision means for deciding start a maintenance operation” in order to know when maintenance is required, as suggested by S2-0302. Moreover, the decision of the apparatus operator to perform maintenance is a decision means. Because maintenance is required, as disclosed in S2-0302, it is implicitly taught that for every semiconductor apparatus requiring maintenance, that a decision means for starting maintenance exists, even if it is only the decision of the apparatus operator to so do.

Because 6.1 further states that hazards during maintenance and service should be prevented, because 22.2 indicates that sufficient exhaust ventilation must be provided during maintenance, and because 22.1.2 and 22.1.2.1 indicate that the absence of oxygen or the presence of hazardous gases in the maintenance areas of a semiconductor apparatus are to be prevented (i.e. are life threatening) using adequate exhaust ventilation, it would have been obvious for one

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of ordinary skill in the art at the time of the invention, to provide sensors to determine the absence of sufficient oxygen or the presence of toxic gases, as taught by 6.9.2 and 6.9.3, and further to provide a gas containing oxygen during maintenance, because oxygen is required for human life and because flowing gas containing oxygen can flush away or dilute toxic gases to safer levels, as suggested by the sections indicated in **S2-0302** should be provided during maintenance.

Regarding claims 2 and 17, although the air provided by the exhaust ventilation in **S2-0302** is not indicated to be clean and dry, it would have been obvious for one of ordinary skill in the art, at the time of the invention, to provide clean, dry air, as opposed to contaminated air, in order to ensure the safety of the employees and to prevent contamination to the semiconductor apparatus, which is absolutely essential in the semiconductor fabrication art to prevent damage to the apparatus and to the semiconductor device to be manufactured therein.

Regarding claims 3 and 18, because 6.1, 6.9.2, and 6.9.3 indicate that sensors should be provided to indicate when a potentially hazardous condition may expose employees to hazardous chemicals during maintenance, and because 22.2 indicates that adequate ventilation (i.e. air) is required to protect human life during maintenance, and because the opening of a semiconductor apparatus poses such hazardous threat, as indicated in **S2-0302**, it would have been obvious for one of ordinary skill in the art, at the time of the invention (1) to provide an open/close sensor to alert the employees to the potential hazard of exposure to either absence of oxygen or presence of toxic gases occurring when the open sensor indicates that the panel has been opened for maintenance, as indicated in **S2-0302**, and (2) to supply air in response to the open condition,

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since it is the open condition which presents the hazard and supplying air which eliminates or reduces the hazard, as taught in **S2-0302**.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

JP 4-186017 A (**Kita et al.**) and JP 10-281464 A (**Shirai et al.**) each disclose a gas safety supply method that includes an oxygen deficiency sensor that activates a ventilation fan supplying air when an oxygen deficient condition is sensed.

US 6,268,904 B1 (**Mori et al.**) discloses a photo-cleaning method of a semiconductor apparatus which teaches cleaning the apparatus in response to a maintenance decision means, wherein oxygen is provided (col. 16, line 61 to col. 17, line 34). Accordingly, this invention anticipates at least, claims 1 and 16.

US 6,287,986 B1 (**Mihara**) teaches a sputtering apparatus having a decision means for determining when maintenance is required on the apparatus (col. 6, lines 29-33).

US Patent Application 2001/0015175 A1 (**Masuda et al.**) teaches a plasma deposition apparatus having a decision means for determining when maintenance is required on the apparatus (paragraphs [0045], [0091], and [0108]).

US 6,151,903 (**Hironaka**) teaches a system for providing clean air for a semiconductor clean room.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erik Kielin whose telephone number is 703-306-5980. The examiner can normally be reached on 9:00 - 19:30 on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr., can be reached at 703-308-4940. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



Erik Kielin
November 15, 2002